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10/692,637

10/24/2003

Michael Liebler-Ranzus

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EXAMINER

AWAI, ALEXANDRA F

ART UNIT

PAPER NUMBER

3663

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|-----------------|-------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/692,637 | LIEBLER-RANZUS, MICHAEL | |
| | Examiner | Art Unit | |
| | Alexandra Awai | 3663 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 1/26/2007 have been fully considered but they are not persuasive. Those aspects of the previous rejection that are no longer applicable to the currently amended claims are omitted from the present Office Action and are considered withdrawn. Claims 1, 2 and 4-6 have been examined.

Claim 1 has been amended to more particularly recite that the lower edges of the outwardly bulging projections are the lower edges of the outer webs, on which the deflector lugs are integrally formed. However, Applicant has claimed a structure defined as "lower edge" that the projection *has*, and which is identical to (i.e., the same as) the lower edge of the outer web. Examiner considers that this lower edge may not necessarily bulge outwardly in the same way as the projection itself. It was for this reason that Examiner previously asserted that Applicant's traversal was based on an unjustifiably narrow interpretation of the structure defined by "integrally on a lower edge" (claim 1), and that Examiner still views the teachings of the prior art as rendering the claimed invention obvious. Additionally, Bryan (Pat. No. 5,307,392 as disclosed in 10/24/2003 IDS) teaches that it is known to have a deflector lug-type structure whose base is integrally formed as a projection on the edge of an outer web.

With regard to the feature characterized in that projections and gills that are projecting in the same direction as the projections may be situated such that the projections extend beyond the gills, Examiner admitted on page 3 of the Office Action dated 9/26/2007 that JP 7-43486 does not teach such. This feature is rejected based on the teachings of both JP 7-43486 and EP 0 557

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085 A1 as set forth in that previous Office Action. In arguing against the case of obviousness based in part on EP 0 557 085 A1, Applicant has offered the following observation:

“The spring elements 61-64 are leaf springs which, when a fuel assembly is inserted into a fuel assembly channel, could not fulfill the protective function for the gills in accordance with the present invention because they would be compressed by the upper edge of the fuel assembly in a radial direction during insertion of the fuel assembly into a fuel assembly channel, so that the gills present at the outer sides of the outer webs would collide with the edge of the water box or rub against its inner walls” (Remarks, pp. 8-9).

However, in contrast to this, EP 0 557 085 A1 provides the following teaching:

“Function of springs 61-64 is plain to see in Fig. 6. Simply stated, springs 61-64 bias spacer S at band 14 on sides 31, 32 away from channel C. This causes registration of protrusions 45-48 to channel C with protrusions 41-44 being spaced apart from channel C” (col. 8, lines 17-22).

The concept of spacing projections from walls of the fuel channel using additional projections as taught by EP 0 557 085 A1 is not limited to any particular number of outer webs, but rather is applicable according to the needs of the skilled artisan.

While the features of the claimed invention are not found in any one of the cited references, and may not be configured precisely as claimed in the cited references, they are each individually established as known, and as having known advantages, by those cited references. The test for obviousness is not that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). It is Examiner's position that it is within the purview of the skilled artisan to combine the old, advantageous features as claimed in order to produce an optimized spacer grid by utilizing commonly available technology. Applicant has not argued this particular issue, or the features of the dependent claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-43486 in view of EP 0 557 085 A1, and DeMario et al. (U.S. 4,692,302).

JP 7-43486 teaches the use of gills and projections (Fig. 5) arranged on the same strip of a spacer grid. Note that the configuration of a structure may be considered a matter of design choice, which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed structure is significant (see *In re Dailey*, 357 F2d 669, 149 USPQ 47 (CCPA 1966)). Nevertheless, the projections (Fig. 5, 19) may be considered to be below the gills (Fig. 5, 20).

JP 7-43486 does not teach that projections and gills that are projecting in the same direction may be situated such that the projections extend beyond the gills. EP 0 557 085 A1 provides a concrete example of using relatively more extensive projections (leaf springs, 61-64) to protect relatively less extensive projections (protrusions, 41-44). As discussed in EP 0 557 085 A1, such biasing defines a sufficient interval to provide clearance for the protrusions (col. 8, lines 17-22). The structure that is provided with these protrusions and leaf springs is a peripheral band (14) for fuel rod spacers, and so the prior art represents technology that is substantially similar in structure and function to the outer side of the outer webs of the presently claimed

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spacer. The peripheral spacer band of EP 0 557 085 A1 and fuel spacer of JP 7-43486 are both designed for use in boiling water reactors.

JP 7-43486 also teaches deflector lugs (Fig. 9, articles 13 and 25), which are commonly used in the art to facilitate the contact of coolant and fuel assembly components. As the “lower edge” of the projection and “a region” of the inner web might be broadly construed (also see section 1 above), the deflectors shown in Fig. 2b or 9 of JP 7-43486, which appear to be integrally formed on the perimeter strip and extend above or below a projecting surface, read on the appended limitations of claim 1. DeMario et al. clearly show a section of an inner web or strip extending into a projection of the perimeter strip it intersects (Figs. 6 and 7), an arguably obvious feature given that interior strips often physically intersect the perimeter strips of spacer grids, and that those perimeter strips almost always possess protective projections, as seen from the figures. The “first supporting section” of claim 4 corresponds to the diverging chamfers, which appear to fit into the projection created by inward protrusions (64). Because the first supporting section fits into this projection, it is apparent that this projection must possess a slot, thereby encompassing the recited feature of claim 6.

The foregoing discussion has shown that each of the recited limitations of claims 1, 2 and 4 are known expedients in the prior art. It is considered that utilizing these known features to achieve an optimally functioning fuel assembly is a matter of optimization within prior art conditions or through routine experimentation (See MPEP § 2144.05 II.A). An optimization of a presently disclosed invention is not considered patentably distinct from the original invention. It would have been obvious to one of ordinary skill in the art to combine the various teachings of

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the cited references to produce an optimized spacer grid by utilizing the commonly available technology.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-43486, EP 0 557 085 A1, and DeMário et al. (U.S. 4,692,302) as applied to claims 1-4 above, and further in view of Kang et al. (U.S. 6,744,843).

The primary references do not explicitly teach that the deflector tags may be in contact with the interior strips of the grid as a means of support, but the contemporary art (Fig. 2) of Kang et al. shows that upwardly extending tabs may be nearly completely intersected by these components. The portion of the interior strips that abuts the deflector lugs then reads upon the "second supporting section" of claim 5. The first and second supporting sections are essentially gussets formed to support the deflector lugs, and the gusset is a notoriously well-known expedient in the mechanical arts. It would have been obvious to those skilled in the art to further modify the deflector lugs taught by JP 7-43486 and modified by DeMário et al. to be in contact with this same lateral extension of the interior webs or strips, thereby creating a gusset with an "inclined edge" (note that Applicant has not specified to what degree the edge is inclined), to reinforce said deflector lugs and improve the stability of the spacer grid while utilizing structural components that are demonstrated by the foregoing discussion to have been known in the art.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-43486, EP 0 557 085 A1 and DeMário et al. (U.S. 4,692,302) as applied to claims 1-4 above alone, or further in view of JP 02002980.

Even if the primary references are interpreted as not teaching that the projections themselves have slots, JP 02002980 shows the utilization of slits (12a) for the intersection of the interior

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webs or strips, which is a commonplace mechanical feature. It would have been *prima facie* obvious, if the projections were placed at the intersection points, as in Fig. 7 of DeMario et al., to have fashioned slits in the projections in order to secure the intersecting interior metal strips of the grid with the perimeter strip having the projections. Such a modification would be motivated by the implicit teaching of JP 02002980 that tabs inserted into slits is a mechanically simplistic and advantageous mode of securing the inner strips of the grid to the strips at the periphery. Utilizing this teaching would amount to no more than the application of known expedients in the art to form an optimized spacer grid as discussed in section 4 of this Office Action.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (571) 272-3079.

The examiner can normally be reached on 9:30-6:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA
April 9, 2007


JACK KEITH
SUPERVISORY PATENT EXAMINER